NATIONAL HURRICANE CENTER TROPICAL CYCLONE REPORT[1]

TROPICAL DEPRESSION FOUR-E

(EP042023)

20–21 July 2023

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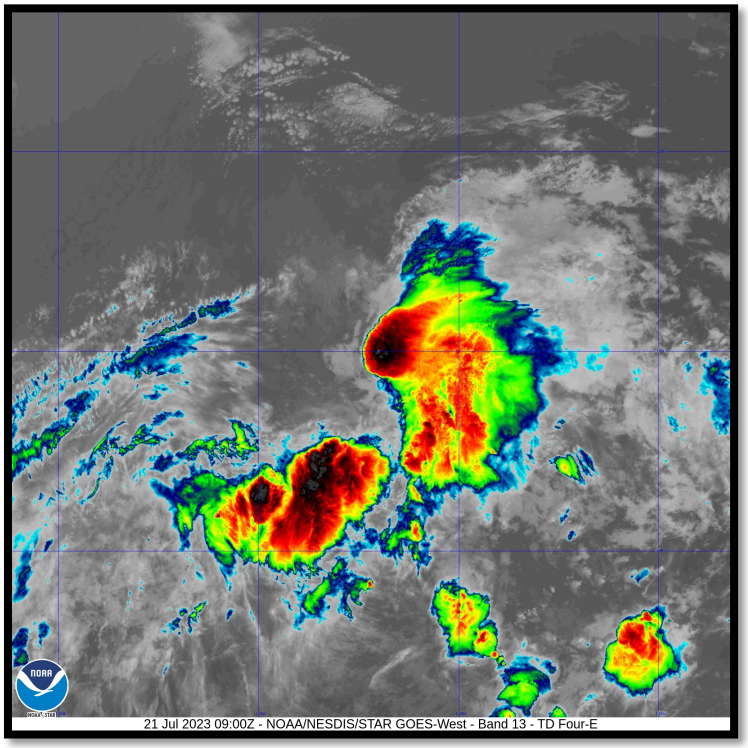
11 August 2023



GOES-18 INFRARED SATELLITE IMAGE OF TROPICAL DEPRESSION FOUR-E AT 0900 UTC 21 JULY 2023. IMAGE COURTESY OF NOAA/NESDIS/STAR.

Tropical Depression Four-E was a short-lived tropical depression over the central part of the eastern Pacific basin.

[1] This is an abbreviated Tropical Cyclone Report since there were no coastal watches or warnings issued and no direct fatalities reported in association with Tropical Depression Four-E.

Tropical Depression Four-E

20–21 JULY 2023

BEST TRACK

The "best track[2]" positions and intensities for Tropical Depression Four-E are listed in Table 1. The best track chart of Tropical Depression Four-E's path is given in Fig. 1, with the wind and pressure histories along with available observations[3] shown in Figs. 2 and 3, respectively.

There were no ship reports of winds of tropical storm force associated with Tropical Depression Four-E.

Origin

Tropical Depression Four-E originated from a tropical wave that moved off the west coast of Africa on 6 July and crossed Central America on 15 and 16 July.

Peak Intensity and Minimum Pressure

Tropical Depression Four-E's peak intensity of 30 kt is based on a blend of subjective and objective satellite intensity estimates. Some satellite intensity estimates on 21 July were near or at tropical storm strength, however the highest estimates occurred just as the deep convection was beginning to wane. The estimated peak intensity is therefore near the lower end of the satellite estimates.

The estimated minimum central pressure of 1006 mb is based on a blend of satellite intensity estimates and the Knaff-Zehr-Courtney (KZC) pressure-wind relationship.

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[2] A digital record of the complete best track, including wind radii, can be found on line at ftp://ftp.nhc.noaa.gov/atcf. Data for the current year's storms are located in the *btk* directory, while previous years' data are located in the *archive* directory.

[3] Observations include subjective satellite-based Dvorak technique intensity estimates from the Tropical Analysis and Forecast Branch (TAFB), objective Advanced Dvorak Technique (ADT) estimates and Satellite Consensus (SATCON) estimates from the Cooperative Institute for Meteorological Satellite Studies/University of Wisconsin-Madison. Data and imagery from NOAA polar-orbiting satellites including the Advanced Microwave Sounding Unit (AMSU), the NASA Global Precipitation Mission (GPM), the European Space Agency's Advanced Scatterometer (ASCAT), and Defense Meteorological Satellite Program (DMSP) satellites, among others, were also useful in constructing the best track of Tropical Depression Four-E.

CASUALTY AND DAMAGE STATISTICS

There were no reports of damage or casualties associated with Tropical Depression Four-E.

FORECAST AND WARNING VERIFICATION

Table 2 provides the number of hours in advance of formation with the first NHC Tropical Weather Outlook (TWO) forecast in each likelihood category. Tropical Depression Four-E is estimated to have formed 18 h earlier than when it was operationally designated as a tropical depression. At the time, the system's marginal nature made it unclear if it would maintain organized deep convection, and it was only designated as a tropical cyclone when the convection had persisted for a sufficient amount of time. Figure 4 shows composites of 7-day TWO genesis areas for each category prior to the formation of Tropical Depression Four-E.

Due to the depression's short existence, only one 12-h official forecast verified, with that forecast having a track error of 39.1 n mi and an intensity error of 0 kt. No meaningful comparisons can be made with the model track or intensity guidance.

There were no coastal watches or warnings issued for Tropical Depression Four-E.

Table 1. Best track for Tropical Depression Four-E, 20–21 July 2023.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
20 / 1200	12.8	119.6	1007	30	tropical depression
20 / 1800	13.0	120.2	1007	30	"
21 / 0000	13.7	121.0	1006	30	"
21 / 0600	14.4	121.9	1006	30	"
21 / 1200	15.1	123.1	1006	30	"
21 / 1800	15.6	124.5	1007	30	"
22 / 0000	16.0	126.1	1007	30	low
22 / 0600	16.3	127.5	1007	30	"
22 / 1200	16.5	128.8	1008	25	"
22 / 1800	16.6	129.9	1009	25	"
23 / 0000	16.7	131.0	1011	25	"
23 / 0600					dissipated
20 / 1200	12.8	119.6	1007	30	maximum winds
21 / 0000	13.7	121.0	1006	30	minimum pressure

Table 2. Number of hours in advance of formation associated with the first NHC Tropical Weather Outlook forecast in the indicated likelihood category. Note that the timings for the “Low” category do not include forecasts of a 0% chance of genesis.

	Hours Before Genesis	
	48-Hour Outlook	168-Hour Outlook
Low (<40%)	54	174
Medium (40%-60%)	18	24
High (>60%)	-	-

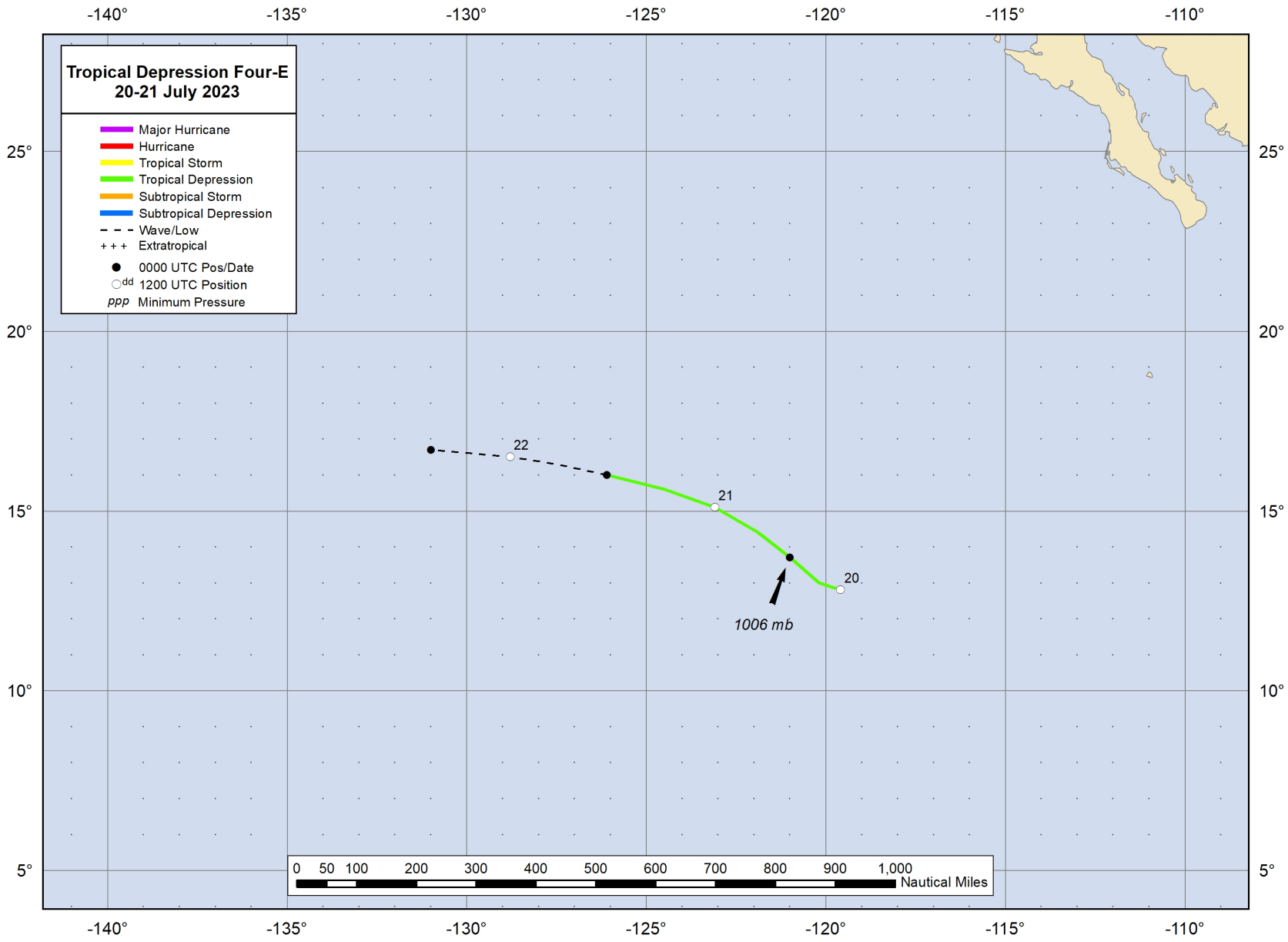

Figure 1. Best track positions for Tropical Depression Four-E, 20–21 July 2023.

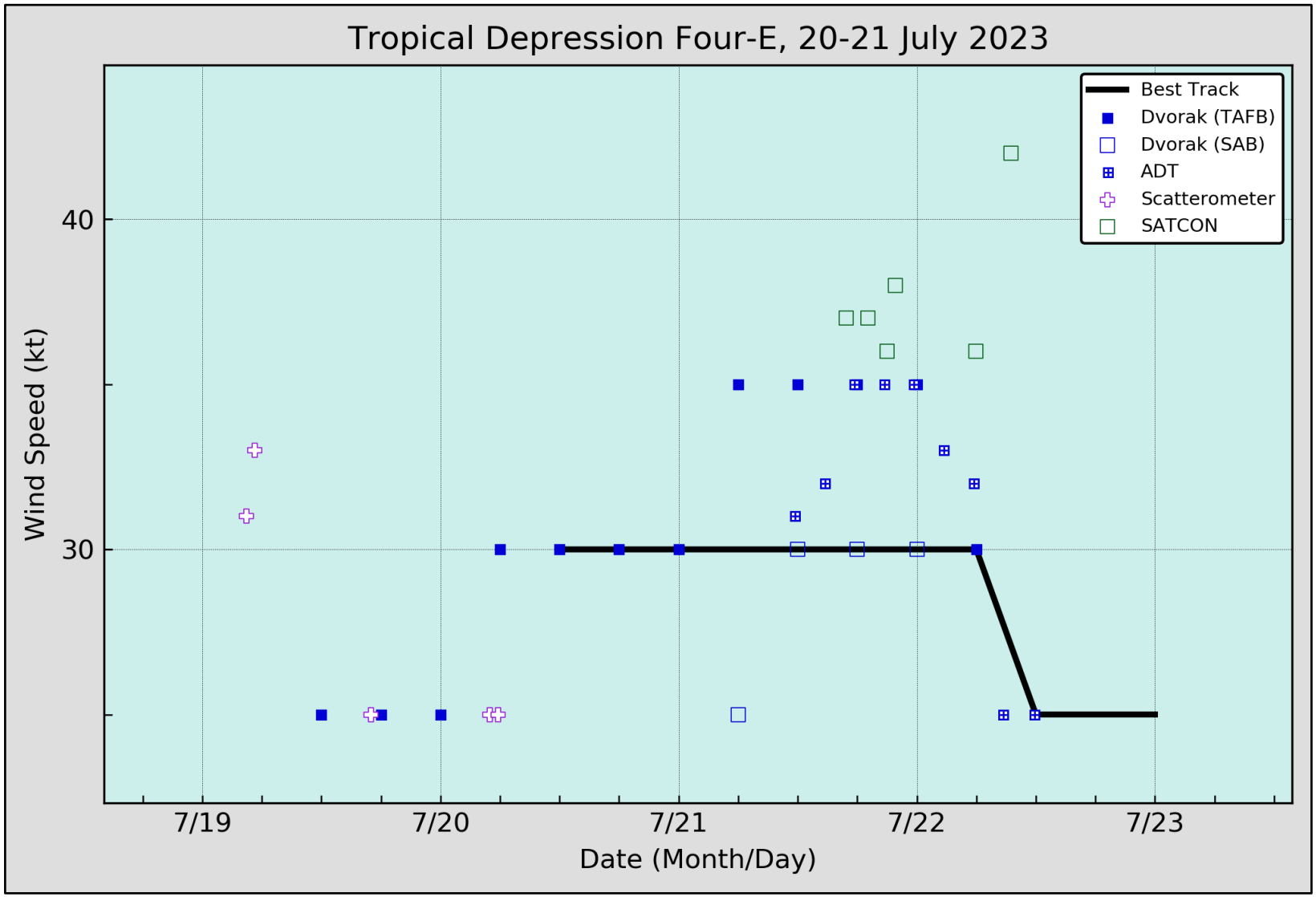

Figure 2. Selected wind observations and best track maximum sustained surface wind speed curve for Tropical Depression Four-E, 20–21 July 2023. Advanced Dvorak Technique estimates represent the Current Intensity at the nominal observation time. SATCON intensity estimates are from the Cooperative Institute for Meteorological Satellite Studies. Dashed vertical lines correspond to 0000 UTC.

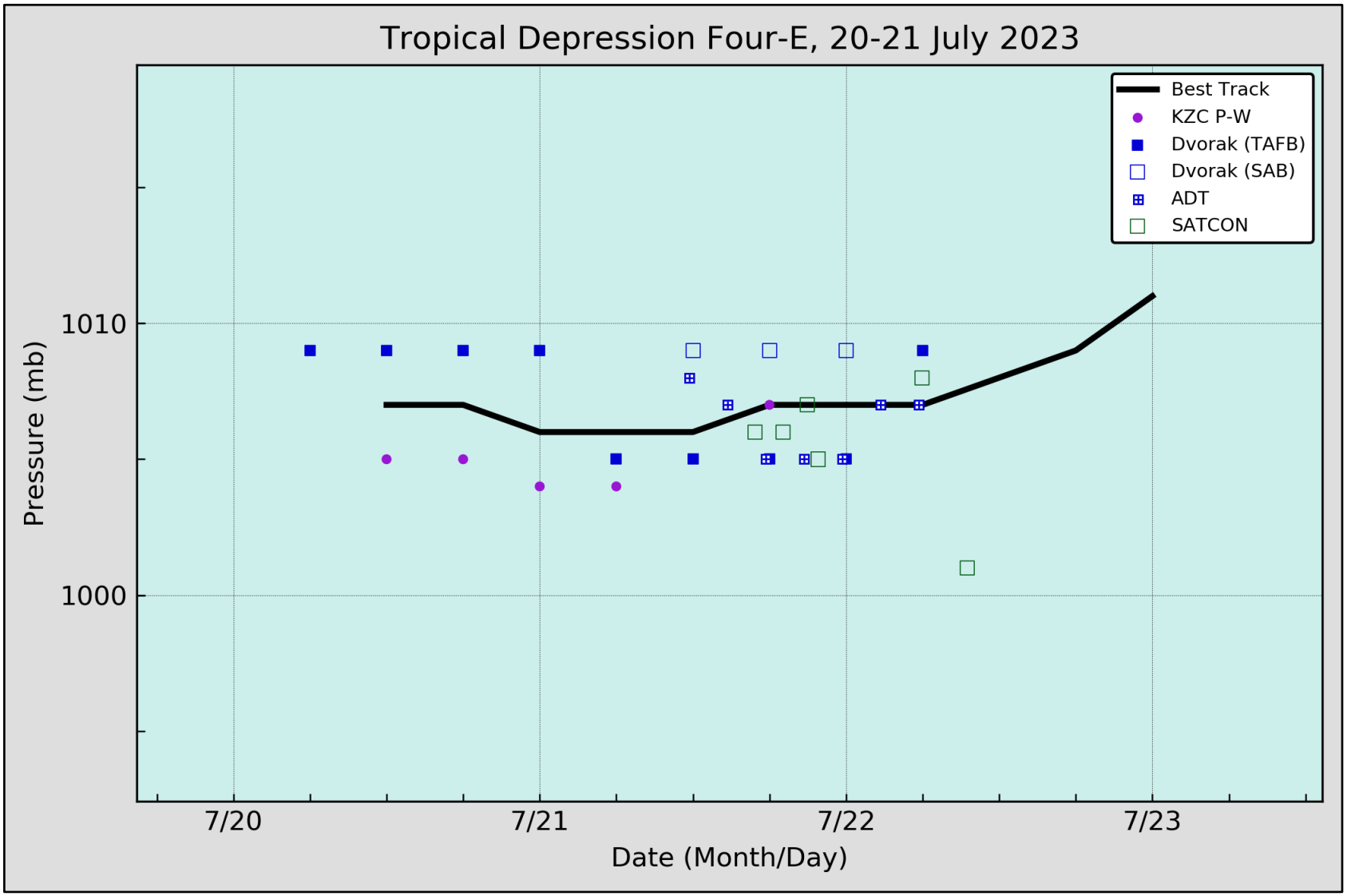

Figure 3. Selected pressure observations and best track minimum central pressure curve for Tropical Depression Four-E, 20–21 July 2023. Advanced Dvorak Technique estimates represent the Current Intensity at the nominal observation time. SATCON intensity estimates are from the Cooperative Institute for Meteorological Satellite Studies. KZC P-W refers to pressure estimates derived using the Knaff-Zehr-Courtney pressure-wind relationship. Dashed vertical lines correspond to 0000 UTC.

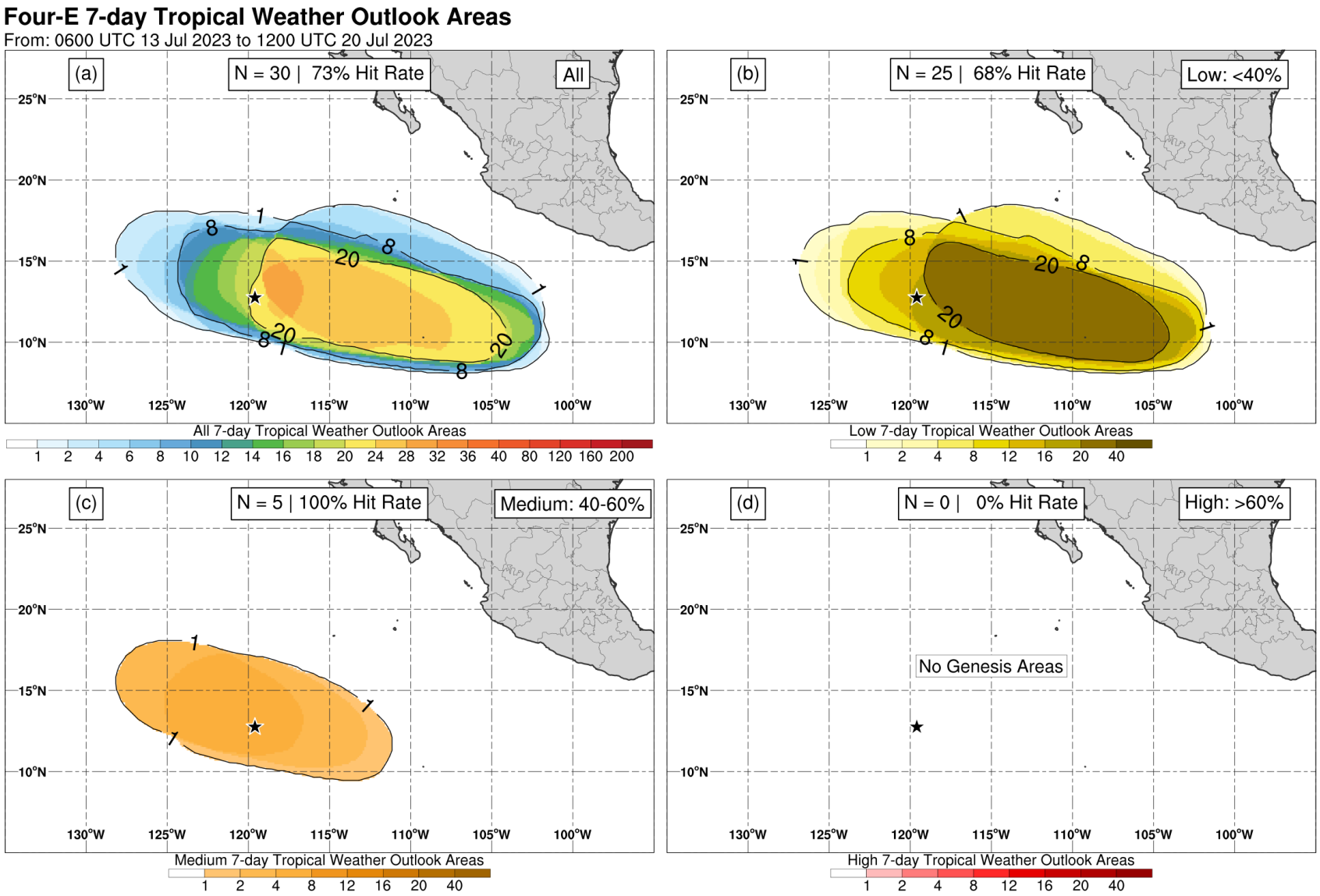

Figure 4. Composites of 7-day tropical cyclone genesis areas depicted in NHC's Tropical Weather Outlooks prior to the formation of Tropical Depression Four-E for (a) all probabilistic genesis categories, (b) the low (<40%) category, (c) medium (40–60%) category, and (d) high (>60%) category. The location of genesis is indicated by the black star.